

1 **PALM-SIZE FOLDABLE COMPUTING AND COMMUNICATION**

2 **ASSEMBLY FOR PERSONAL USERS**

3 **BACKGROUND OF THE INVENTION**

4 1. Field of the Invention

5 The present invention relates to a palm-size foldable computing and
6 communication assembly for personal users, in particular, an integrated
7 assembly that is a mobile telephone when the assembly is in a fold-back
8 form and a portable computer when the assembly is in an expanded form.
9 Versatile communication capabilities allow a user to log on to the Internet
10 any place and any time, thus providing a virtual business office anywhere.

11 Technological inventions such as telephones, computers and satellite
12 receivers have greatly improved the life of human beings, providing modern
13 conveniences and improving our working conditions. Because these
14 electronic devices are often created for a single application, modern offices
15 and homes often have many conventional electronic gadgets, and the
16 situation is becoming unmanageable. If the functions of a conventional
17 telephone, portable computer, copier, camera and satellite transceiver could
18 be integrated into one assembly, business people would no longer need to
19 carry or borrow these pieces of equipment on business trips or when they are
20 out of the office. All they would need is a dynamic product like the present
21 invention that has brought together most of the office functions in a personal
22 portable assembly. With ingenious design and efficient production means,
23 this type of all-in-one personal assembly can be produced at a reasonably

1 low cost, so that most end users would be able to afford to purchase one for
2 their personal use. Furthermore, the integration of the satellite
3 communication capability on a mobile phone enables users to avoid the
4 situation of having to pay a surcharge for transferring a call through the local
5 switching network and international telephone service. Whenever they travel
6 abroad, they only need a fixed dialing number to establish satellite
7 communication from any place in the world. The present invention allows
8 end users to create new business opportunities without the space and time
9 constraints previously applied. At the same time, the present invention can
10 be delivered to the hands of a consumer at a reasonable price. For the end
11 users, how to integrate the functions existing on various electronic products,
12 make a product easy to operate and keep the cost down are some of the high
13 priorities for further improvements.

14 SUMMARY OF THE INVENTION

15 The main object of the present invention is to provide a palm-size
16 foldable computing and communication assembly for personal users, which
17 integrates the functions of a conventional telephone, computer and satellite
18 receiver and router, and has created a new powerful machine with multiple
19 functions.

20 A first folding set and a second folding set together form a palm-size
21 foldable computing and communication assembly for personal users.

22 When placed in a fold-back form, the front panel of the first folding
23 set is a mobile phone, and the back panel becomes a display screen when

1 placed in an expanded form. The main components of a computer are
2 installed behind the panels to form a portable computer.

3 The second folding set when expanded is a membrane keyboard
4 which is connected to the first folding set through an infra red transmission
5 or bluetooth means, and the assembly has built-in jacks for accepting
6 external input and a battery to provide the operating voltage to the first and
7 second folding sets.

8 This all-in-one multi-function machine mentioned above can fully
9 satisfy the computing and communication needs of a business user as well as
10 a home office user.

11 The second folding set is a standard keyboard used to support the first
12 folding set; therefore it has to be connected to the first folding set during
13 assembly operation. The features and structure of the present invention will
14 be more clearly understood when taken in connection with the
15 accompanying figures.

16 BRIEF DESCRIPTION OF THE DRAWINGS

17 Fig. 1 is a perspective view of a palm-size foldable computing and
18 communication assembly for personal users in accordance with the present
19 invention;

20 Fig. 2 is a front plan view of the first folding set of the palm-size
21 foldable computing and communication assembly in Fig. 1 in folded form;

22 Fig. 3 is a left side plan view of the first folding set in Fig. 2;

1 Fig. 4 is a perspective view of the first folding set in Fig. 2 partially
2 expanded;

3 Fig. 5 is a top plan view of the first folding set in Fig. 2 in folded form;

4 Fig. 6 is a bottom plan view of the first folding set in Fig. 2 in folded
5 form;

6 Fig. 7 is a perspective view of the front side of the second folding set
7 in Fig. 1 partially expanded.

8 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

9 With reference to Fig. 1, a palm-size foldable computing and
10 communication assembly for personal users in accordance with the present
11 invention comprises a first folding set (10) and a second folding set (20).
12 The first folding set (10) is a foldable computer and telephone , and the
13 second folding set (20) is a foldable keyboard.

14 The first folding set (10), the computer and telephone, comprises a
15 first segment (11), a second segment (12), a third segment (13) and a fourth
16 segment (14). The segments (11, 12, 13, 14) are interconnected by hinges
17 (30) to accordion fold the first folding set (10).

18 Each segment is an independent unit resembling a rectangular block.
19 Each segment consists of six panels: a front panel, a back panel, a left side
20 panel, a right side panel, a top panel and a bottom panel.

21 For purposes of orientation, the following reference to "left" and
22 "right" refer to the segments (11, 12, 13, 14) when view from the front. The
23 top left and bottom left corners on the back panel of the first segment (11)

1 and the top right and bottom right corners on the back panel of the second
2 segment (12) are connected by hinges (30). the top left and bottom left
3 corners on the front panel of the second segment (12) and the top right and
4 bottom right corners on the front panel of the third segment (13) are
5 connected by hinges (30). The top left and bottom left corners on the back
6 panel of the third segment (13) and the top right and bottom right corners on
7 the back panel of the fourth segment are connected by hinges (30).

8 With reference to Fig. 1, 2 and 3, when the first folded set (10) is
9 folded, the front panel of the first segment (11) is a mobile phone. When the
10 first folded set (10) is expanded, the back panel is a full-screen display (101),
11 and a touch keypad (144) is on the lower portion of the fourth segment.

12 With reference to Fig. 2, a CCD camera (113) is installed near the top
13 of the first segment (11) behind the front panel, with a telephone earpiece
14 (115) on each side. A mobile phone keypad (112) with multiple keys is
15 mounted in the center of the front panel, and a microphone (114) is installed
16 below the mobile phone keypad (112). A display (111) is mounted between
17 the CCD camera (113) and the mobile phone keypad (112). A mobile phone
18 antenna (122) is mounted on the left hand side of the top panel.

19 With reference to Fig. 3, a power switch (116) is mounted near the top
20 of the right side panel of the first segment (11) of the first folding set (10),
21 and a floppy disk slot (119) is formed in the center of the right side panel. A
22 volume control knob (110) is mounted near the bottom of the right side
23 panel. An earphone jack (117) and a microphone jack (118) are mounted

1 between the power switch (116) and the floppy disk slot (119). Two USB
2 ports (141) are mounted near the top of the left side panel of the fourth
3 segment (14), and a CD slot (142) is mounted in the center of the left side
4 panel. A charging jack (143) is mounted between the CD slot (142) and the
5 bottom of the left side panel.

6 With reference to Fig. 4 and 5, the first folding set (10) further
7 comprises a satellite receiver and router (11A), a credit card sensor slot
8 (11B), a card reader (121) and an antenna (122). The satellite receiver and
9 router (11A) and the credit card sensor slot (11B) are mounted on the top
10 panel of the first segment (11), and the card reader (121) and the antenna
11 (122) are respectively mounted on the top panel of the second segment (12)
12 and first segment (11). With reference to Fig. 6, a first infrared or bluetooth
13 port (140) is mounted on the bottom of the fourth segment (14) to
14 interconnect with the second folding set (20) by wireless communication
15 through a second infrared or bluetooth port (210) mounted on the top panel
16 of the first segment (21) of the second folding set (20).

17 With reference to Fig. 7, the second folding set (20) also has four
18 segments. When fully expanded, the second folding set (20) is a standard
19 membrane keyboard assembled from four segments (21~24) linked by
20 hinges. Multiple battery cells (not shown) are mounted inside four segments
21 (21~24), and a track ball (230) is mounted on the lower portion of the third
22 segment (23).

1 With reference to Fig. 2, under normal conditions, the palm-size
2 foldable computing and communication assembly for personal users is
3 folded. The front panel of the first segment (11) of the first folding set (10)
4 is a mobile phone for wireless and satellite communication. When the first
5 folding set (10) is fully expanded, the back panel becomes a display screen
6 (101) for an embedded computer. With a touch keypad (144) mounted in the
7 fourth segment, the embedded computer and the display screen (101) form a
8 portable computer. The computer can be further linked with the mobile
9 phone and satellite receiver and router (11A) on the first segment for
10 networking and wireless transmission, in effect creating a mobile business
11 office. Data can be retrieved and saved on storage media by using the CD
12 slot (142) and the floppy drive slot (119). The credit card sensor slot (11B)
13 provides the convenience of mobile banking service. If a user is not familiar
14 with the touch keypad (144), he or she can use the standard membrane
15 keyboard on the second folding set (20) to input data by connecting the
16 membrane keyboard. An extra battery housed inside the keyboard is also
17 added to the assembly to allow the assembly standby time to be extended
18 even further.

19 The foldable computer and telephone set in the palm-size foldable
20 computing and communication assembly for personal users in accordance
21 with the present invention is capable of establishing communication links
22 through satellites and providing the following features through wireless
23 means:

1. palm-size computer with IR transmission capability;
2. three dimensional vision capturing and transmission;
3. logging on to Internet and networking;
4. voice recognition;
5. printing, facsimile and recording services;
6. credit card verification and smart card device;
7. digital camera input output;
8. satellite VoIP option
9. multicast streaming over satellite option,
10. wireless VoIP

From the foregoing, the palm-size foldable computing and communication assembly for personal users has combined all the foregoing features in one assembly, with a creative configuration and functional improvements over the conventional products. The foregoing illustration of the preferred embodiments in the present invention is intended to be illustrative only, under no circumstances should the scope of the present invention be so restricted.